Funding structure, procyclicality and lending: Evidence from GCC banks

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Abstract: The paper examines whether banksô funding structure amplifies procyclicality. Using data for GCC banks for the period 1996-2009, the evidence suggests that banks with higher wholesale dependence cut back lending by a greater amount. In addition, the procyclicality of the financial system and the crisis exacerbates the effect, although the results differ across bank ownership

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1. Introduction

In recent times, the issue of procyclicality of banking firms has come into much prominence, as it was perceived to be one of the underlying causes of the recent financial crisis. Excessive procyclicality of bank lending may amplify macroeconomic fluctuations, thereby threatening the stability of the financial system. Quantifying these risks remains a challenge, especially since financial soundness indicators for banks tend to improve in the upward phase of the credit cycle. Country experiences suggest that credit booms can be associated with unsustainable domestic demand growth, overheating and asset price bubbles. Financial sector difficulties cannot be ruled out either, for example, loan losses following a protracted recession. How significant these risks are and what role should public policy play are key questions confronting policymakers.

In this context, whether and to what extent the funding structure of banks influences their lending behavior has not been adequately addressed in the literature. Aggregate bank-level data for OECD economies indicates that in several of such countries (Germany, Italy, Portugal, Spain and Switzerland), deposits have steadily lost ground at the expense of non-deposit funds (ECB, 2008a; 2008b). This change in the funding composition was called into question in the wake of the recent financial meltdown. In particular, wholesale funding created significant maturity mismatches with banks devoting limited attention to the consequences of potential risks of drying up of such funds. As confidence withered and depositors began withdrawing their funds *en masse*, banks found it increasingly difficult to meet such large and sudden withdrawals and took recourse to interbank markets to fund maturity mismatches. With confidence in financial institutions having eroded, the interbank market also came to a standstill, leaving banks with no recourse but to seek government intervention. Across countries and continents, besides conventional (cuts in key policy rates, liquidity injections) and unconventional (collateral swaps, introduction of foreign currency swap lines, quantitative easing) policy measures, governments have

heavily intervened in banks, including resorting to outright nationalization (as in US, UK, Russia, Belgium), increasing depositor protection limits (as in US, UK, Germany, Australia, Hungary, Czech Republic), injecting capital in troubled banks (as in US, UK, France, Germany, Switzerland, Russia), to mention a few.

Towards this end, this paper focuses on the relationship between funding structure and bank lending for GCC countries. To the best of our knowledge, this is perhaps one of the early studies to explore such an interlinkage and most certainly for the GCC countries. The bank-level data enables to improve the accuracy of estimation and clearly discern the impact of funding structures on bank lending, and employ control variables so as to obtain ócleanô estimates to the maximum permissible extent.

The GCC banking system provides a reasonable laboratory to examine this issue in a holistic fashion. These countries share similar economic and social characteristics and are essentially dependent on a single primary commodity for exports. On average, hydrocarbon accounts for nearly half of the regionôs GDP, contributes over 70% of these countries merchandise exports and over three-fifths of government revenues (IMF, 2010a). Following the oil boom, real GDP growth in these countries averaged over 6.5% during 2003-08 as compared to less than 4% during the preceding five year period. Non-oil GDP growth improved markedly, averaging nearly 7.5% during this period (IMF, 2010 a,b; 2011). The fiscal and external positions also witnessed an upturn, providing headroom to the authorities for greater economic diversification, while allowing the surpluses to be invested for productive purposes.

The analysis employs a detailed bank-level dataset. The core of the data is the information on bankôs balance sheet and income expenditure details as published by *Bankscope,* a comprehensive, global database containing information on nearly 30,000 public and private banks globally. The data has been extensively utilized in cross-country banking research, including examination of issues relating to bank interest margin (Demirguc Kunt and Huizinga, 1999), market discipline and deposit insurance (Demirguc Kunt and Huizinga, 2004), privatization and bank performance (Boubakri *et al.* 2005), foreign bank penetration (Haas and Lelyveld, 2006), corporate governance and bank risk taking (Laeven and Levine, 2009) and more recently, the impact of legal changes on bank lending (Haselmann *et al.,* 2010) and relationship between bank efficiency and stock market performance (Liadaki and Gaganis, 2010).

The present study contributes to the literature in several distinct ways. First, the study augments the emerging literature that explores the relevance of bank funding structures. Second, the study adds to the extant literature on bank lending by examining how wholesale dependence across different bank characteristics influences loan supply (Gambacorta and Marques-Ibanez, 2011). Besides being an under-researched area of study, it is one of the few articles to examine this issue for GCC countries, which typically have bank-based financial systems. Finally, the paper complements a growing body of empirical research that explores the effects of the global financial crisis on the banking system. While several

studies have examined the behavior of U.S. banks during the crisis (Huang, 2010; Boyson *et al*., 2011; Santos, 2011), the interplay between bank lending and funding structure and how it is affected by the crisis is an aspect that has not been investigated in prior empirical research.

The reminder of the article continues as follows. The relevant literature is briefly reviewed in Section 2. Section 3 provides certain stylized facts regarding bank funding and lending in these countries. Section 4 sets up the empirical strategy, followed by the results (Section 5) and concluding remarks (Section 6).

2. Literature Review

Several explanations have appeared in the literature to explain fluctuations in credit policies of banks. Bernanke and Gertler (1990) explain the phenomenon of procyclicality within a financial accelerator framework. With information asymmetry between banks and borrowers, economic upturns lead to an improvement in the valuation of potential collateral, making access to bank finance easier. As downturn sets in and collateral values become depressed, banks deleverage by cutting back credit and recalling their loans, amplifying the credit contraction.

Another source of procyclicality is the financial sector misperception of risk by financial market participants, as reflected in banksô lending and investment decisions (Borio *et al.*, 2001). Market participants behave as if risk declines during the upswing phase and rises only when downturn sets in. This is caused mainly by difficulties in measuring the time dimension of risk, often leading to risk being under-estimated during boom times and over-estimated during downswings, creating laxity in credit standards during booms.

A third source of procyclicality can be traced to incorrect compensation structures. Once managers obtain a reasonable return on equity for their shareholders, they may engage in activities that depart from the firmôs value maximization. To the extent that managers have limited liability, a manifestation of this possibility could be to favour high risk-return strategies (i.e., over extension of credit) in order to increase the social presence of bank managers or the power of managers in an enlarging organization (Williamson, 1963).

Banking sector liberalization could lead to credit booms not only as a result of increased profitable opportunities in more risky sectors, but also as a result of increased competition for market share triggered by asymmetric information about the creditworthiness of borrowers (DellôAriccia, 2001; DellôAriccia and Marquez, 2006). Countries with recently liberalized banking sectors tend to have a high proportion of borrowers with unknown creditworthiness. Banks attempt to garner greater market shares by loosening their credit requirements, leading to higher than expected demand for credit. As adverse selection sets in, repayments become difficult, compelling banks to cut back on their credit supply.

Several empirical studies have recently examined the pro-cyclical nature of bank lending. The balance of evidence appears to suggest that lending rapidly increases during the growth phase, in effect implying that credit cycles would tend to amplify business cycles. Using Spanish bank-level data, Salas and Saurina (2002) finds that economic shocks are quickly transmitted to Spanish banks. Employing a similar framework, Jimenez and Saurina (2006) observes that collateral requirements are significantly compromised during a business upturn, fuelling a lending boom. Focusing specifically on the subprime episode, DellôAriccia *et al.* (2008) finds that lending standards tend to be compromised more in areas that experienced larger credit booms.

Another strand of the literature examines the use of wholesale funding and its role in the recent subprime crises. Ratnovski and Huang (2009) explores the factors behind the unusual resilience of Canadian banks during the recent global meltdown and finds that they relied less on wholesale funding than their peers in other advanced countries. Demirguc Kunt and Huizinga (2010) found that banksô resilience on non-deposit funds increases their risk. Other studies show that banks that relied heavily on wholesale funds were more affected by the liquidity crunch, experienced a large abnormal decline in their share prices (Adrian and Shin, 2009; Raddatz, 2010). In effect, the evidence strongly suggests that greater use of wholesale funding exposed banks to newer types of risks that were not accounted for in their risk management practices, leading them to ultimately cut back on their lending activities.

Closer to the region, Khamis (2010) provides an overview of the financial crisis on GCC countries. Al Hassan *et al* (2010) analyses the banking sector in the GCC economies, including trends in ownership, balance sheet exposures and risks. Espinosa and Prasad (2010) analyze the delinquent loans in GCC banks and finds that a decline in non-oil GDP growth by 3 percentage points would raise NPLs by roughly 0.3%. None of the studies however investigate the interlinkage between bank lending and their funding structure and this remains central to the empirical inquiry of the paper.

III. Credit growth and funding mix: Stylized facts

The oil boom since the early 2000 led to rapid improvements in economic growth in the GCC countries, so much so that the banking sector experienced rapid credit growth. In real terms, credit growth averaged well over 20% during 2003-08, leading to a sharp rise in the credit-to-GDP ratio in most of these countries. By way of example, the credit-to-GDP ratio, which ranged from 25-50% in 2001 in the GCC countries increased sharply thereafter to range between 32-65% during 2002-08 (World Bank, 2010). Together with benign interest rates and buoyant economic activity, this supported higher demand for real estate and equities, pushing up prices across the region.

Following Raddatz (2010), we define retail dependence (*Retail*) as the ratio of retail deposits to total liabilities, where retail deposits is total deposits *netted for* bank deposits. As earlier, we transform this variable, according as:

$$Wholesale = -\log(1 + \mathrm{Re}tail) \quad \textbf{(1)}$$

so that higher values of *Wholesale* represents greater reliance on wholesale deposits.

IV. Database and empirical strategy

The present data covers the period 1996-2009. We started off with a total of over 100 banks, but subsequently deleted the finance and investment companies, including investment banks, leaving us with 80 banks. Several banks also do not report data on some relevant variables required for the analysis, such as the dependent variable (or some of its components). These banks were therefore excluded from the analysis. Finally, to moderate the influence of outliers, we winsorized the top and bottom 1% of observations for the dependent variable. This left us with data on 67 banks at an average of 9.1 years of observation per year, with a total of 645 bank-years. Table 1 provides the details.

Table 2 enlists the reliance on retail funding by GCC banks during the sample period, by ownership (Panel A), by country (Panel B) and by crisis (Panel C). Later in the analysis, we employ dummy variables to control for these characteristics. Without loss of generality, it appears that Islamic banks display greater reliance on retail deposits as compared to commercial banks.

Turning to country-level variations, the evidence strongly suggests wide divergence across countries in terms of their retail dependence. Banks in Bahrain and Kuwait are observed to exhibit lowest retail dependence. Consider, for example, banks in Bahrain. On average, roughly 50% of their deposits are retail as compared to nearly 85% in case of Qatari banks. This difference is statistically significant at the 0.01 level. In most of the other instances, and especially for Bahrini and Kuwaiti banks, their differences *vis-a-vis* banks in other countries are statistically significant as well.

Banks also appear to have increased their wholesale dependence, especially during the crisis. To see this, note that prior to the crisis, nearly 77% of overall banks deposits were retail in nature. This declined to around 66% during the crisis. The difference is observed to be statistically significant.

Looking at real loan growth, the evidence indicates that commercial banks expanded their loan book at a much faster rate as compared to Islamic banks. These differences are observed to be statistically significant at the 0.05 level. In terms of country-level differences in loan expansion, the evidence indicates that loan growth was much more subdued in Oman and Saudi Arabia as compared to their other GCC neighbours. Loan growth in Oman was significantly lower than in most other countries. As well, AE banks loan book grew strongly as compared to Saudi Arabia. These differences were strongly significant at conventional levels.

The univariate results in Table 2 are strongly supportive of significant differences across banks in terms of their retail dependence. The subsequent correlation analysis is also suggestive of differences in loan growth across banks, depending on their extent of wholesale dependence or bank ownership. These tests do not take into consideration several bank-specific variables. By way of example, lending could differ by bank size. The soundness and fragility of banks could also be an important consideration. Similarly, the state of the banking industry as also the macroeconomic environment could impinge on bank lending. Taking these concerns on board, we employ a multivariate regression framework, by specifying a reduced-form equation for bank *b* in country *c* of the following form:

$$\Delta Loans_{b,c} = \varphi_0 + \varphi_1 BANK_{b,c} + Wholesale_{b,c}(\varphi_2 + \varphi_3 GROWTH_c + \varphi_4 ISLAMIC_c + \varphi_5 CRISIS_{2008\text{–}09}) + \varphi_6 SYS_c + \varphi_7 MACRO_c + \varphi_8 ISLAMIC_{b,c} + \varphi_9 COUNTRY_c + \varphi_{10} CRISIS_{2008\text{–}09} + e_{b,c} \quad \textbf{(2)}$$

where ϕ*Loans* is the real growth rate of loans (measured as the difference between log-loans at time *t* and log-loans at time *t-1*), *BANK* is a matrix of bank level variables included with a lag to avoid endogeneity problems, *SYS* is the banking industry level variables, including measures of financial development (proxied by bank credit to GDP) and concentration (asset share of three largest banks), *MACRO* is the set of macroeconomic variables such as inflation (proxied by change in GDP deflator) and real non-oil GDP growth (*GROWTH*), the measure of job-creating economic activity in these countries (IMF, 2010). *ISLAMIC* is the ownership dummy for Islamic banks, *COUNTRY* are the fixed effects that controls for country-specific factors (geography, institutions, *etc*.) and $CRISIS_{2008\text{-}09}$ is a dummy to take into account the recent economic crisis. Finally, $e_{b,c}$ is the error term.

The coefficients of interest are *Wholesale* ï the dependence on wholesale funds by bank *b* in country *c* - and its interaction terms. A positive (negative) estimate of ű$_2$ would indicate that banks with greater dependence on wholesale funds tend to lower lending. The interaction term of wholesale dependence with GDP growth enables to discern pro-cyclicality in bank lending: to the extent that banks with greater wholesale dependence lower lending in an economic upturn, the coefficient on ű$_3$ would be negative. As a result, if the ű$_3$ coefficient is positive and large enough to outweigh a negative value of ű$_2$, this would suggest that banks with greater wholesale dependence tend to over-extend credit in the upturn of the business cycle, since the value of (ű$_2$+ ű$_3$) increases (for a positive estimate of ű$_3$), indicating greater sensitivity of lending to economic growth for such banks. Similar interpretations can be advanced for the other interaction terms.

Funding strategy of banks is however, likely to be endogenous. A case in point was the recent subprime crisis, where banks funding pattern was an important consideration behind their lending strategy. Employing data on syndicated loans, Ivashina and Scharfstein (2010) show that new loan to large borrowers fell during the recent financial crisis and that this decrease was larger among banks with less deposit financing. Cornett *et al*. (2010) also provide evidence to suggest that banks with more stable

sources of funding were better able to continue lending. As a result, we follow a two-stage regression procedure. In stage 1, banksô wholesale dependence is regressed on a set of exogenous variables. This provides us the value of predicted wholesale dependence. To complete the procedure, eq. (2) is estimated after replacing wholesale dependence by its predicted value.

The literature identifies several determinants of banksô funding strategy (BIS, 2010). These include, *inter alia*, scale economies (a minimum size allows banks to better diversify their funding sources), market power (greater market power might facilitate banksô access to retail deposits) and overhead costs (higher overhead costs might impel banks to compensate for the same by increasing reliance on wholesale funds). At the macroeconomic level, we include per capita GDP (GDP/population), inflation and the real non-oil GDP growth (*GROWTH*).

The empirical estimation proceeds in several stages. First, we estimate (2) as above, using real loan growth as the dependent variable and addressing the endogenity issue. However, as observed earlier, some countries have more observations than others. Therefore, the results could be driven by countries with a disproportionately larger number of observations. Following recent research (Micco *et al*., 2007), we address this issue by weighing each observation by $1/N_{b,t}$ (i.e., the bankôs share in total assets in country *b* in year *t*).

In all regressions, we use a standard set of control variables, the importance of which has been emphasized in recent research (Berger *et al*., 2005; DelloôAriccia *et al*., 2008, Nier and Zicchino, 2006). We use both total size (proxied by log of total asset, LTA) and relative size (proxied by asset of a given bank in a country c in a given year to total bank asset in the country in that year, SHTA). The first variable controls for scale economies and the second controls for market power. Besides, we include measures of capitalization (proxied by equity-to-total asset ratio, EQTY), liquidity (proxied by the liquid asset-to-total asset ratio, LQDTY) and non-interest income (proxied by fee income-to-total asset ratio, FEE). The rationale for employing the latter set of variables is that capitalization and liquidity tends to differ between Islamic and commercial banks owing to their different business profile and non interest income tends to be higher for banks that derive a major part of their income from commissions. Throughout the analysis, the reported standard errors take on board the possibility of serial correlation and heteroskedasticity pertaining to the same bank (i.e., bank-level clustered standard errors).

V. Discussion of the results

V.1 Determinants of wholesale dependence

We first detail the first-step regressions, which study the determinants of banksô wholesale dependence. The results, reported in Table 3 show that we are not able to reject the Sargan test. Moreover,

we are not able to reject the null hypothesis of no second-order serial correlation. In other words, this suggests that the GMM model is well specified.

Regarding the explanatory variables, there is evidence of high level of persistence in the dependent variable. Most control variables exhibit expected signs. Smaller banks with higher overheads tend to display greater wholesale dependence. The point estimates suggest that an increase in banks size by 10% lowers wholesale dependence by nearly 1%. Among the macroeconomic variables, relatively well-off countries with lower inflation tend to rely more on wholesale funds.

V.2 Determinants of bank loan growth

The first stage of the regressions provides us with the predicted values of wholesale dependence. We use these predicted values for the second-stage regressions, as outlined in eq. (2). The regression results are set out in Table 4.

First, we briefly discuss the control variables. Well-capitalized banks appear to extend more credit. This is consistent with the literature which suggests that bank soundness is an important factor influencing their credit decisions (Nier and Zicchino, 2005). At the banking industry level, higher levels of concentration, by lowering competition, acts as a brake on credit. On the other hand, higher levels of financial development appear to create a conducive environment of credit expansion. The evidence conclusively points to the fact that recent financial crisis has exerted a negative impact on banksô credit growth. At the macroeconomic level, higher GDP growth, by raising economic activity, improves credit growth. Private credit increases with inflation, but less than one-to-one, implying that inflation, in fact, dampens real private credit growth (Guo and Stepanyan, 2011).

After controlling for other factors including country effects, the results strongly support the fact that banks with higher wholesale dependence tend to decrease lending. The relation is economically meaningful, as well. For example, a 1% increase in wholesale dependence reduces real loan growth roughly 3%. A coefficient above unity on wholesale dependence indicates that bank credit grows more than proportionally with reduced reliance on wholesale funds, which is not surprising, given the nature of bank-based nature of financial systems that typifies these economies.

Col. (2) includes the interaction terms. The effect of the business cycle variable is extremely large. Consider, for instance, the impact of the economic activity variable on bank credit in the country where real non-oil GDP grew by 6 percent, the median growth rate in the sample. Ignoring the impact of the business cycle, the effect is approximately 2.3 percentage points. However, if the impact of the business cycle is taken into account, the point estimates of Col. (2) yield an estimate of approximately 2.7 percentage points (= -2.3-0.06*6.4).

Col. (3) considers the response to bank lending by Islamic banks. The point estimates in Col. (3) indicate that Islamic banks with greater wholesale dependence cut their bank lending by a relatively lower magnitude as compared to commercial banks. Whereas overall, banks lowered their lending by roughly 3.1% in response to a 1% rise in wholesale dependence, for Islamic banks, these magnitudes were lower by about 20%. Using cross-country data on roughly 120 banks in several countries with significant commercial and Islamic bank presence, Maher and Dridi (2010) conclude that credit growth by the latter group were relatively less affected by the crisis, a finding consistent with the current analysis.

Col. (4) considers the impact of the crisis on loan growth. Here again, the analysis is a pointer to the fact that the crisis exacerbated the dampening impact on credit growth, lowering it by 23%.

The final column considers the impact of all the relevant variables, taken together. The estimates on *wholesale* and its interaction terms suggest that the impact of growth on bank lending is quite large. To obtain a better sense of the magnitudes, we examine the differential in bank lending of an average Islamic bank located in a country impacted by a crisis. The point estimates in Col. (5) suggest that, in such as case, bank lending would have been lower by roughly 2.4%. Taking on board the growth impact, the magnitudes are extremely large. Consider, for instance, a country with a growth of 4.1%, the lowest average growth in the sample. For such a country, the overall magnitude of the impact would be of the order of -2.7%. On the other hand, for the country with a growth of 9.8% - the highest average growth in the sample - the point estimates yield a magnitude of nearly 3.2% - a difference of nearly 20% as compared to the previous estimate.

Summing up, the results indicate that banks with greater wholesale dependence did cut back their lending; the impact was exacerbated by business cycle considerations.

VI. Concluding remarks

The issue of procyclicality in bank lending has come into sharp focus following the recent financial crisis. Standard-setting bodies and regulators have been making efforts at developing macroprudential instruments to mitigate such procyclicality (BIS, 2009; IMF, 2009; Caruana, 2010). One area of concern has been the role played by banksô funding pattern in influencing such procyclical behaviour.

Using disaggregated data on GCC banks for 1996-2009, the paper employs panel data techniques to explore the lending behavior of GCC banks that incorporates the period of the recent economic crisis. The analysis indicates significant differences in banksô lending as well as funding patterns, judged in terms of ownership, countries and even the pre- and post-crisis periods. More specifically, banks with greater dependence on wholesale funds appear to have cut back lending by a significant amount. The procyclicality of the financial system and the crisis exacerbated the effect, although the impact was a bit

moderate for Islamic banks. These results are quite robust. It is apparent in simple univariate comparisons as well as in multivariate regressions that controls for various bank-level, banking industry level and macroeconomic variables. Robustness checks of the results based on alternate estimation techniques appear to lend credence to these findings. These findings are in congruence with recent research (Hasan and Dridi, 2010).

The findings have important ramifications, some of which are already being taken on board in recent policymaking. For one, it appears that traditional banks ï with a reliance on deposit funding - are relatively safe as compared to those with have a high proportion of non-deposit funds in their liability mix. Illustratively, countries (UK, Spain, Iceland, Ireland) and banks (Northern Rock and Bradford and Bingley in the UK, Fortisbank of Belgium[2], UBS and Credit Suisse of Switzerland) with overt reliance on wholesale funding seem to have been hit hardest by the recent crisis. Therefore, in conjunction with other monetary and prudential ratios, the banksô funding composition can also provide important signals to policy makers regarding their health and viability. Second, uncontrolled expansion of the loan book in the quest for garnering market share could be a recipe for future problems. Across countries, over-stretched financial systems and ñsearch for yieldsò has been found to lead to riskier banking systems, leading commentators to seek for imposition of ñspeed limitsò, either on their loan book or on segments that appear in danger of over-extension. Macroprudential measures to moderate growth in certain segments of the financial sector have been undertaken in several countries such as India (commercial real estate lending), Korea (credit card business), Indonesia (housing loans), Estonia (residential property), Portugal (housing loans) and Romania (consumer and mortgage loans).

Prior to the crisis, there was a growing trend worldwide towards universal banking, so that banks were relying on a combination of deposit and non-deposit funding to support their asset book. The crisis demonstrated that, while such a strategy could entail substantial benefits to the bank in terms of scale and scope economies, there are limits as to how far banks can veer away from traditional banking models, especially if they are to conduct their business in a safe and cost-efficient manner.

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[2] Renamed as BNP Paribas Fortis after its merger with BNP Paribas in May 2009

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Table 1. Number of observations per country

Country	N.banks	N.Obs (Avg.)	Total Obs.
Bahrain (BH)	15	9.1	236
Kuwait (KW)	5	5.3	135
Oman (OM)	7	8.9	29
Qatar (QA)	8	10.6	62
Saudi Arabia (SA)	10	9.9	84
United Arab Emirates (AE)	22	10.7	99
Total	67	9.1	645

Table 2. Retail dependence and loan growth across various characteristics

Variables	Retail	N.Obs	Loan growth	N.Obs
Panel A: Ownership				
Commercial	0.725 (0.328)	496	0.072 (0.156)	484
Islamic	0.752 (0.295)	218	0.061 (0.088)	215
t-test for difference	*1.084*		*1.151*	
Panel B: Country				
Bahrain	0.515 (0.471)	161	0.073 (0.216)	153
Kuwait	0.668 (0.182)	34	0.075 (0.121)	50
Oman	0.814 (0.099)	65	0.048 (0.059)	64
Qatar	0.835 (0.254)	92	0.070 (0.083)	88
Saudi Arabia	0.806 (0.089)	106	0.053 (0.070)	100
United Arab Emirates (AE)	0.826 (0.249)	256	0.080 (0.105)	242
t-test for difference				
Bahrain v. Kuwait	3.149***		0.107	
Bahrain v. Oman	7.627***		1.278	
Bahrain v. Qatar	7.016***		0.114	
Bahrain v. Saudi Arabia	7.621***		1.034	
Bahrain v. AE	7.724***		0.417	
Kuwait v. Oman	4.337***		1.443	
Kuwait v. Qatar	4.085***		0.252	
Kuwait v. Saudi Arabia	4.252***		1.196	
Kuwait v. AE	4.535***		0.283	
Oman v. Qatar	0.739		1.911**	
Oman v. Saudi Arabia	0.519		0.465	
Oman v. AE	0.630		3.195***	
Qatar v. Saudi Arabia	1.057		1.527	
Qatar v. AE	0.295		0.903	
Saudi Arabia v. AE	1.143		*2.792***	
Panel C: Crisis				
Pre-crisis (1996-2007)	0.767 (0.318)	559	0.073 (0.109)	552
Crisis (2008-09)	0.657 (0.305)	155	0.053 (0.107)	147
t-test for difference	*3.957***		*1.092*	

Standard deviation within parentheses

***, ** and * denotes statistical significance at 1, 5 and 10%, respectively

Table 3. Regression results for determinants of wholesale dependence

Variable	Coefficient
Lag (Wholesale)	0.122 (0.054)**
LTA	-0.081 (0.023)***
SHTA	-0.015 (0.149)
Overhead cost	0.653 (0.299)**
GDP/population	0.152 (0.043)***
GROWTH	0.044 (0.043)
INFLATION	-0.048 (0.018)***
Period	1996-2009
Banks; N.Observations	67; 548
Sargan test (p-Value)	0.259
AR (1); AR(2)	0.000; 0.126

Standard errors within parentheses
***, ** and * denote statistical significance at 1, 5 and 10%, respectively
AR (1) and AR (2) are the first-and second-order autocorrelation and follows N(0, 1)

Table 4. Regression results for loan growth

Variable	(1)	(2)	(3)	(4)	(5)
Wholesale	**-2.776**	**-2.331**	**-3.051**	**-2.902**	**-2.713**
	(0.643)* **	**(0.807)*** **	**(0.618)*** **	**(0.408)*** **	**(0.498)*** **
Wholesale*GROWTH		**-6.404**			**-8.151**
		(1.254)* **			**(2.045)*** **
Wholesale* ISLAMIC			**0.629**		**0.906**
			(0.220)* **		**(1.124)**
Wholesale*CRISIS				**-0.669**	**-0.569**
				(0.374)*	**(0.328)***
LTA	-0.002	-0.002	-0.003	-0.002	-0.002
	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)
SHTA	-0.129	-0.125	-0.153	-0.155	-0.183
	(0.204)	(0.206)	(0.215)	(0.178)	(0.179)
EQTY	0.106	0.105	0.106	0.105	0.103
	(0.056)*	(0.056)*	(0.056)*	(0.054)*	(0.054)*
LQDTY	0.095	0.097	0.096	0.096	0.099
	(0.071)	(0.071)	(0.070)	(0.069)	(0.069)
FEE	0.351	0.405	0.291	0.342	0.328
	(0.967)	(0.968)	(0.921)	(0.995)	(0.969)
Concentration	-0.412	-0.407	-0.411	-0.415	-0.407
	(0.092)***	(0.091)***	(0.093)***	(0.100)***	(0.101)***
Financial development	0.109	0.114	0.109	0.108	0.114
	(0.057)*	(0.059)*	(0.057)*	(0.055)**	(0.057)**
GROWTH	0.332	0.353	0.332	0.336	0.361
	(0.064)***	(0.064)***	(0.064)***	(0.063)***	(0.061)***
INFLATION	0.132	0.126	0.133	0.126	0.120
	(0.066)**	(0.068)*	(0.066)**	(0.085)***	(0.086)
ISLAMIC	-0.006	-0.006	-0.006	-0.006	-0.006
	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)
CRISIS	-0.046	-0.047	-0.046	-0.047	-0.049
	(0.020)**	(0.021)**	(0.020)**	(0.025)**	(0.025)**
Intercept	0.152	0.146	0.154	0.149	0.146
	(0.082)*	(0.081)*	(0.081)*	(0.080)*	(0.079)*
Country fixed effects	YES	YES	YES	YES	YES
Diagnostics					
Time period	1996-2009	1996-2009	1996-2009	1996-2009	1996-2009
Banks; N.Obs	67; 486	67; 486	67; 486	67; 486	67; 486
R-squared	0.1467	0.1480	0.1476	0.1473	0.1500

Standard errors (clustered by bank) are within parentheses
***, ** and * denote statistical significance at 1, 5 and 10%, respectively